NUMB. XXXIV.

The Universal Instructor in all Arts and Sciences:

AND

PENNSYLVANIA GAZETTE

To be continued Weekly. *The 21st of the 6th Month*, 1729.

AIR

THIS Niſus or Endeavour to expand, every Particle of Air always exerts; and thus ſtrives againſt an equal Endeavour of the ambient Particles; whoſe Reſiſtance happening by any means to be weakened, it ſtrait diffuſes into an immenſe Extent. Hence it is, that thin Glaſs Bubbles, or Bladders full of Air, and exactly cloſed, being included in the exhauſted Receiver of an Air-Pump, burſt, by the Force of the included Air. So a Bladder quite flaccid, containing only the ſmalleſt Quantity of Air, ſwells in the Receiver, and appears quite full. And the ſame Effect is found, by carrying the flaccid Bladder to the Top of an high Mountain.

This Power does not ſeem to have any Limits aſſign'd it; nor does it appear capable, by any Means whatever, of being deſtroy'd or diminiſh'd. Mr. *Boyle* made ſeveral Experiments, with a View to diſcover how long Air, brought to the greateſt Degree of Expanſion he could reduce it to in his Air-Pump, would retain its Spring; and could never obſerve any ſenſible Diminution; even tho' this poor thin Air was clog'd ſome Months with a Weight which one would wonder how it ſhould ſupport a Moment.

Yet, Mr. *Hawksbee*, by a later Experiment, has ſhewn, that the Spring of the Air may be ſo diſturb'd by a violent Preſſion, as to require ſome Time to return to its natural Tone.

The Weight or Preſſure of the Air, it is obvious, has no Dependance on its Elaſticity, but would be the ſame, whether the Air had ſuch Property or not. But the Air, in being elaſtick, is neceſſarily affected by the Preſſure, which reduces it into ſuch a Space, as that the Elaſticity which re-acts againſt the compreſſing Weight, is equal to that Weight.

In Effect, the Law of this Elaſticity, is, that it encreaſes as the Denſity of the Air encreaſes; and the Denſity encreaſes, as the Force encreaſes wherewith it is preſs'd. Now, there muſt neceſſarily be a Balance between the Action and Re-action; *i. e.* the Gravity of the Air which tends to compreſs it, and the Elaſticity of the Air which endeavours to expand it, muſt be equal.

Hence, the Elaſticity increaſing or diminiſhing univerſally, as the Denſity encreaſes, or diminiſhes, *i. e.* as the Diſtances between the Particles diminiſhes or encreaſes; 'tis no Matter

AIR

whether the Air be compreſs'd, and retain'd in ſuch Space, by the Weight of the Atmoſphere, or by any other Means: It muſt endeavour in either Caſe, to expand with the ſame Force. And hence, if Air, near the Earth be pent up in a Veſſel, ſo as to cut off all Communication with the external Air, the Preſſure of the encloſed Air will be equal to the Weight of the Atmoſphere. Accordingly we find, Mercury ſuſtained to the ſame Height, by the Elaſtick Force of Air encloſed in a Glaſs-Veſſel, as by the whole Atmoſpherical Preſſure.

On the ſame Principle may Air be artificially condenſed.

And hence the Structure of the Wind-Gun.

Dr. *Halley* aſſerts, in the *Philoſophical Tranſactions*, that from the Experiments made at *London*, and by the *Academy del Cimento* at *Florence*, it may be ſafely concluded, that no Force whatever is able to reduce Air into eight Hundred Times leſs Space than what it naturally poſſeſſes on the Surface of our Earth. In Anſwer to which, M. *Amontons* in the Memoirs of the *French* Academy, maintains, that there is no fixing any Bounds to its Condenſation; that greater and greater Weights will ſtill reduce it into leſs and leſs Compaſs; that it is only elaſtick, in virtue of the Fire it contains; and that as 'tis impoſſible to drive all the Fire out of it, 'tis impoſſible ever to make the utmoſt Condenſation.

The *Dilatation* of the *Air*, by Virtue of its elaſtick Force, is found to be very ſurprizing; and yet Dr. *Wallis* ſuggeſts, that we are far from knowing the utmoſt it is capable of. In ſeveral Experiments made by Mr. *Boyle*, it dilated firſt into nine times its former Space; then into 31 Times; then into 60; then into 150. Afterwards, it was brought to dilate into 8000 times its Space; then into 10000, and even at laſt into 13679 times its Space; and all this by its own expanſive Force, without any Help of Fire.

On this depends the Structure and Uſe of the Manometer.

Hence, it appears, that the Air we breathe, near the Surface of the Earth, is compreſs'd by its own Weight into at leaſt the 13679th Part of the Space it would poſſeſs *in vacuo*. But if the ſame Air be condenſed by Art, the Space it will take up when moſt dilated, to that it poſſeſſes when condenſed, will be, according to the

the ſame Author's Experiments, as 50500 to 1.

Hence we ſee how wild and erroneous was that Obſervation of *Ariſtotle*, that Air, render'd ten times rarer than before, changes its Nature, and becomes Fire.

The Concluſion of the Dialogue.

Will. *Your Worſhip will be a Father to me and my Family indeed then; I can never deſerve ſo much at your Hands, and't pleaſe you, I am very willing to work ſtill for my Bread, I thank your Worſhip.*

Landl. *No,* William, *You ſhall never work any more for* your *Bread; you have been thankful for a little,* William; *I heard you laſt Night, when* you *were at Prayer in* your *Family, and giving Thanks to God for the Plenty* you *enjoy'd: Poor* William! you *do not know how it affected me, that never gave God thanks in my Life; now* you *ſhall be thankful for better things.*

Will. *I ſhall be greatly thankful to* your *Worſhip too, and't pleaſe* you.

Landl. *No,* William, *do not thank me, thank God ſtill.*

Will. *And* your Worſhip *mend my Condition, I fear my Thankfulneſs to God ſhould abate. When I liv'd ſo near Miſery and Diſtreſs, it made me more ſenſible of God's Goodneſs, in keeping me out of it, than I may, I doubt, when I am full.*

Landl. *I do not think you will ever be unthankful,* William, *that could be ſo full of a Senſe of God's Mercy, even in the extremeſt Poverty: But come* William, *I ſhall leave that; I have order'd my Steward both to provide for and employ* you, *and I ſhall ſay no more of that now; but my Buſineſs now is of another Nature: And firſt, I muſt tell* you, *how I have been employ'd, ſince I left* you *laſt Night.*

[Here he gave the poor Man an Account of himſelf, and of his Reflections upon what he had ſaid to him, and how inſenſibly he had received ſecret Comfort, as above, and he found Tears run down the poor Man's Cheeks, all the while he was talking to him for Joy.]

Will. *O Sir! give God the Praiſe, this is all his own Work; and I hope* your *Comfort ſhall encreaſe and continue: Did I not tell* you, *Sir, God would teach* you *to pray?*

Landl. *But now,* William, *what ſhall* I *do with this Book?*

Will. *Read it, Sir, and* you *will pray over it whether* you *will or no.*

Landl. *But* I *am ſtill ignorant;* I *have no Miniſter near me to explain it to me.*

Will. *The Spirit of God will expound his own Words to you.*

Landl. *Well,* William, you *ſhall be my Miniſter: Come, and ſit down by me, and read in it.*

Will. *Alas!* I *am a ſorry Creature to be a Teacher, Sir; but, and't pleaſe you,* I *have turn'd down ſome Places, which* I *thought of, to ſhew* your Worſhip, *for your firſt Reading.*

Landl. *That's what* I *wanted,* William.

Will. *And't pleaſe you, here's a Text, which tells you, what is the whole Deſign of the Goſpel; for what End the Life of our bleſſed Redeemer was laid down, and his Works and Doctrine were publiſhed to the World; and this ſeems to be the firſt thing we ſhould know of the Scriptures: For indeed it is the Sum and Subſtance of them.*

Landl. *Let me ſee it,* William.

Will. *Here it is, Sir:* Theſe Things are written, that ye might believe, that Jeſus is the Chriſt the Son of God, and that believing, ye might have Life thro' his Name, *John* 20. 31.

Land. *That is very comprehenſive indeed,* William.

Will. *And here is another Paſſage* I *folded down, leſt you ſhould ask, how you ſhould do to believe, it is in* Mark 9. 24. *it is a Story of a Man, who brings his Child to our Lord to be healed, when poſſeſs'd of an evil Spirit: Our Lord asks him, if he could believe,* If thou canſt believe, all things are poſſible to him that believeth; and *v.* 24. the Father cried out with Tears, Lord, I believe, help thou mine Unbelief.

Landl. *What do* you *look at me for,* William? [*William* looks full in his Face, while he repeated the Words.]

Will. *O Sir!* I *ſaw your very Heart;* I *know you pray'd;* I *know you ſaid* Amen *in your very Soul to that Word: Glory be to the Grace of God, and to the* Word of God, *for you; the Scripture, read with ſuch a Heart as yours now is, will ſoon teach you all you want to know, and all that you want to do.*

The poor Gentleman was overcome with his Words, and could not ſpeak for a good while; Tears came out of his Eyes, and at laſt he burſt out thus; Lord! what a Creature have I been, that have liv'd without the Teachings of the Scripture all my Days!

Thus far this happy poor Man was made an Inſtrument to the reſtoring this Gentleman, and bringing him to the Knowledge of God, and to a Senſe of Religion; and in a word, to be a moſt ſincere Chriſtian. We ſhall farther hear of him, after the next Dialogue.

FOREIGN AFFAIRS.

Petersburg, May 10.

We learn from Moſcow, that on the 3d Inſtant, in the German Slaboda, a Fire broke out, and deſtroyed 150 Houſes, and Part of the Lutheran Church, and the Emperor was preſent, to give neceſſary Orders to extinguiſh it.

Gibraltar, May 14. There is at preſent but one Engliſh Man of War in our Bay; and yet we are perfectly eaſy, and free from any Apprehenſions of a new Siege, the Spaniards making no Motion, that we hear of.

Dantzick, May 29.

A Copy of the Grievances drawn up by the Proteſtants of Poland, to ſend, as it ſaid, to the Kings of Sweden and Pruſſia, in Order for their Interceſſion for them in the enſuing General Dyet, *viz.*

1. THAT ſince the Peace of Oliva, they have had 128 Churches and 46 Schools taken from them, and were entirely driven out of thoſe they had the Uſe of in common with the Catholicks.

2. That moſt Part of the Revenues for maintaing their Miniſters had been given to the Convent,

vent, ſo that thoſe poor People had little or no Subſiſtence.

3. That in the Cities and Towns, the Magiſtrates whereof conſiſted both of Catholicks and Proteſtants, the latter were now entirely excluded the Magiſtracy.

4. That from Time to Time the Children of Proteſtants had been taken away by Force, to put into Convents, where they were brought up in the Catholick Religion.

5. That when any Tax was impoſed on the Inhabitants of the Kingdom, the Proteſtants were taxed double, ſo that their Caſe is worſe than that of the Jews, from whom they exact only the ordinary Capitation.

London, May 24.

We have an Account from Lisbon by Letters dated the 8th Inſtant, that an Expreſs was arrived there, which came from Arabia in Diſguiſe, to St. John D' Acri, and thence in a French Ship to Marſeilles, and from thence by Land; which brought Advice, that the Portugueze at Goa having fitted out a Squadron, and imbarked in it a Number of Troops, proceeded to Bombaz a Sea-Port in Arabia, which after nine Months Siege they reduced, and that then the adjacent Country ſubmitted to them. The new Governour of the Place diſpatched this Expreſs (the Monſoon preventing any coming by Sea) to haſten a ſufficient Force in Order to ſupport them in their Conqueſt. The City was about 36 Years ago poſſeſſed by the Portugueſe.

On Monday the Court of King's Bench at Weſtminſter gave Judgment on the four Perſons convicted for printing and publiſhing Miſt's Journal of the 24th of Auguſt laſt, *viz.* John Clark the Preſsman, for printing and publiſhing, was ſentenced to ſtand three times in the Pillory, *viz.* at Charing-Croſs, Temple-Bar, and the Royal-Exchange, and to ſuffer ſix Months Impriſonment; Robert Knell, the Compoſitor, to ſtand twice in the Pillory, once at the Royal Exchange, and alſo to ſuffer 6 Months Impriſonment; Joſeph Carter (the Apprentice and a Preſsman) to walk round the four Courts in Weſtminſter-Hall, with a Paper on his Forehead, denoting his Offence, and to ſuffer one Month's Impriſonment. Amy Walker (Miſt's Maid) for publiſhing the ſaid Paper, to be ſent to the Houſe of Correction for ſix Months, there to be kept to hard Labour, and to be ſtript down to the Waſte, and receive the Correction of the Houſe.

The ſame Day the Reverend Mr. Thomas Woolſton was brought to the King's Bench-Bar, Weſtminſter, to receive Sentence; the Argument offer'd in Arreſt of Judgment was overrul'd by the Court, but his Sentence was put off till next Term.

On Thurſday came on the Tryal of ---- Huggins, Eſq; late Warden of the Fleet, upon an Indictment for the murdering of Mr. Edward Arne, in the Priſon of the Fleet, which laſted from Ten in the Morning till paſt Ten at Night; the Pleadings of the Council for the King, and of the Council for the Priſoner upon Points of Law ariſing, and the examining of a great Number of witneſſes, Pro and Con, taking up a great deal of Time; after which the Jury withdrew, but for ſome Hours could not agree; at laſt they brought in a ſpecial Verdict, which was ſettled in Court Article by Article, by the Council for the King and Council for the Priſoner.

Dublin, May 20. We have an Account of the Death of a great Number of black Cattle and Horſes in ſeveral Parts of the Country, by the Backwardneſs of the Spring; the Horſes run mad, loſe their Sight, and in a few Hours expire, tho' ſeemingly well before.

We are told from Biddenden and Smarden, that three Houſes and twelve Barns were blown down by a Storm of wind which happen'd at thoſe Places after Thunder and Lightning, with abundance of large Trees, ſome of which were broke to pieces.

From Hedcorn, 'tis ſaid a Barn and Stable were burnt down, and three Horſes were conſumed in the Flames.

We have an Account from Bexhil in Suſſex, that on Tueſday the 20th Inſtant a terrible & ſurprizing Storm of Thunder and Lightning, accompanied with a whirlwind, aroſe from the Sea, and blew down Part of a Barn and Part of a Houſe call'd Ruckholt, and alſo a Houſe and Barn at Sidney-Green, a Barn and Part of a Houſe of Sir Thomas Webſter's; deſtroy'd part of a wood belonging to Sir Thomas; from thence it went to Selſcomb and blew down ſeveral Houſes, Out-Houſes, Barns and Garden-walls; ſeven Barns and two Houſes at Ewhurſt, ſeveral Barns at Semſted belong to J. Lade, Eſq; and above 100 of the fineſt Trees in his wood call'd Church-wood; from whence the Whirlwind went over the Marſh, and blew down ſeveral Capſons and Gates, and carried them away, and did abundance of Damage in other Places.

Mr. James Gambier, Solicitor to the Truſtees for the forfeited Eſtates of the late South-ſea Directors, is appointed Warden of the Fleet-Priſon, which Place, we hear, he will hold by Patent, during the Life of Thomas Bambridge, and have a Salary of 300 l. per Annum from his Majeſty.

May 31. On Friday ſe'nnight came on the Trial of Tho. Bambridge, Eſq; who was Warden of the Fleet, at Juſtice-Hall, in the Old Bailey, before the Right Hon. the Lord Mayor, Mr. Juſtice Page, and Mr. Baron Carter, upon an Indictment for the Murder of Mr. Caſtell; and the Counſel for the King opened the Matter of the ſaid Indictment very ſtrenuouſly, and called ſeveral Evidences to ſupport the ſame; but they not proving the Facts charged upon him, he was acquitted, without the Examination of his own Evidences; but we hear there is a Warrant of Detainer to keep him in Priſon, and that a Bill of Indictment will be preferr'd againſt him for Felony.

All the four Daughters of the Right Hon. the Lord Carteret are preparing to be inoculated for the Small-Pox.

Lon-

London: April 16. Yesterday Morning about 10 'o Clock, as his Royal Highness the Prince of Wales and his Sisters, were returning from taking the Air, one of the Grooms by Accident rid over a Girl about Six Years of Age, in St. James's Park: They all stopp'd, and were very much concerned at the Misfortune, and his Royal Highness dismounted, and enquired how the Child did, ordered it to be taken Care of, and gave the Person that was with it 5 Guineas; it had received very little Hurt more than being affrighted.

April 30. Yesterday about one o'clock, as his Royal Highness was going from his own Apartment to the Queen's, he had two Baskets of Strawberries presented to him. He was pleased to order the Donor of them a Guinea; and perceiving a Woman big with Child, ordered the Strawberries to be given her; and she begg'd to kiss his Royal Highness's Hand, and he granted it to her.

May 10. By Letters from *Paris*, dated *May* 11. we have the following remarkable Story from Ploeseat, a Town in the Lower Bretagne, That a Damsel there having been abused by a young Man in the Neighbourhood, who promised her Marriage, and afterwards not only denied that Promise, but also protested, that he never had any Commerce with her; the poor Girl began a judicial Process against him; upon Conviction whereof, in those Cases, the Man is to have the Choice of two Nooses, that is, either to be tied up by his Priest, or the Hangman: But as the Meeting of the States of Bretagne had been lately suppressed by the King's Edict, the Lower Courts had not Power of Life and Death; so that the Lover was condemn'd only in 6000 Livres Damages. The young Lady who was an only Child, and of a good Family, did not think this sufficient Satisfaction; so that immediately after the Judgment, she took a Pistol, and went to find out her Spark, and spoke to him after this Manner, *I am come, Sir, to oblige you to repair my Honour, and to do me Justice, by marrying me; which if you refuse, this Instrument shall instantly put an End to your Life.* The young Man was couragious enough to seize his Mistress, and to disarm her of the Pistol, which he carried directly to her Mother; and withal told her, that if she did not take Care to prevent her Daughter from giving him any farther Disturbance, he would sue her in a Criminal Process. The Mother took the Pistol, and assured the Gentleman, that her Daughter should never after give him any Trouble; but as he turned about to go out of the Room, the old Gentlewoman discharged the Pistol at him, and shot him dead upon the Spot; and as soon as she had done, went away with her Daughter, to the Isle of Guernsey, from whence she is soliciting her Pardon by the Interest of some Lords in her Neighbourhood.

Entred Inwards:

Sloop *Endeavour*, Rich Robinson, *from* New-York.
--- *Mary Anne*, John Carrel, *from* Turks-Island.
Ship *Morton-house*, Ja. Coultas *from* Deal.
Snow *Satisfaction*, Cornel. Davis, *from* Milford.
Sloop *Nancy*, David Tynes, *from Mountserrat.*
Ship *Hannah Hope*, William Annis, *from* London.

Entred Outwards.

Sloop *Enterprize*, W. Burch *to* Barbadoes.
--- *Rose*, Joseph Wilson, *ditto.*
--- *Westmoreland*, William Gordon, *to* Jamaica.
Ship *Freedom*, James Nicholson, *to* Bristol.

Cleared for Departure.

Sloop *Cath.* & *Anne*, Dunk. Murrey, *to* Virginia.
Ship *New Bristol-Hope*, Tho. Chalkley *to* Barbad.
Sloop *John* & *Eliz.* John Casely, *to* Antegoa.
--- Sloop *Dolphin*, Elias Cotting, *to* Boston.

RAlph Sandiford Shopkeeper, over-against the Court-House in *Philadelphia*, intends for *England* in two Months, therefore desires all Persons indebted to him to come and discharge the same to prevent the Expence of Legal Prosecutions.

Also any Person who have any Demands on him, are desired to come and receive the same.

In the mean time he is for selling off his Shop and Houshold Goods either by Wholesale or Retail, which consists of Bedding and Pewter, and other Necessaries.

Also Looking-Glasses of most Sizes, and Bottles of all Sizes from Gallons to Half-Gills.

Also good Wine, Rum, Sugar, Melasses, Salt, and most Sorts of Fruit and Grocery, and Drugs for Dying.

Also if any Person will take the whole, may have two Months Credit on good Security.

Ralph Sandiford.

N. B. *I take* New-castle-Money *for all Sorts of* English *Goods, and will sell Remnants cheap.*

VERY good Live-Geese Feathers to be sold by *Evan Powel*, in Chesnut-street, next Door but one to *Andrew Hamilton*, Esq;

RUN away from Edward Kemble, of the Township of Springfield, in the County of Burlington, a Servant Man, named John Cope, of a small Stature, brown Complexion, and short black Hair; had on when he went away, a good Beaver Hat, darkish grey Jacket, striped Ticken Breeches, Stockens of a grey Colour, and good Shoes. Whoever secures the said Runaway, so that his Master may have him again, shall have Thirty Shillings Reward, and reasonable Charges paid by me,

Edward Kemble.

ALL Persons indebted to *Samuel Keimer*, are earnestly desired to send in or bring their several Payments, in Order to enable him to do speedy Justice to his Creditors, and thereby prevent his having any additional Trouble.

PHILADELPHIA: *Printed by* Samuel Keimer, *where Subscriptions are taken in for this Paper, at* Ten Shillings *a Year, and Advertisements inserted at* Three Shillings *each.*